

THE AUSTRALIAN FRESHWATER RHIZOPODA.

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PART I.

It is intended to enumerate the Australian species and describe such as may be new, in this paper.

1. AMOEBA VILLOSA. Wallich.

I have seen a great number of Amoebæ recently from various parts of the Botany Swamps, and they all seem to be very similar to the species described as *A. villosa*, by Wallich. These Australian specimens are very large and creep about very rapidly between the roots of *Sphagnum*. The posterior end—that is the one behind in motion—generally possesses the short villi-like pseudopodia characteristic of the above species. These, however, appear not to be present invariably; often ordinary lobate pseudopodia are seen on all sides.

The outer layer of protoplasm is hyaline; in the interior there are small and highly refractive granules in great abundance, and others of larger size and spherical in shape. These are very numerous in the large specimen, but the younger ones appear more transparent.

The nucleus is large and spherical; being, however, very soft, its shape is liable to great variations as the animal moves along. The whole inner portion is occupied by a transparent vacuole which is enclosed in a very clear reticulation. The chromatin threads of the superficial reticulation do not extend to the interior of the nucleus, which is occupied by achromatin only.

Osmic acid specimens and also acetic acid specimens show this particularly well.

2. *ARCELLA VULGARIS*. Ehrenberg.

This species occurs in all freshwater lagoons and creeks suitable.

It appears that the Australian forms are more rounded at the margin and do not possess so sharp a margin as it is figured for instance by Bütschli in Bronn's *Classen und Ordnungen des Thierreichs*, Band I., Tafel II., fig. 9a.

3. *LIEBERKUEHNIA AUSTRALIS*. Nova Species

This species differs from the species described by Cienkovsky, *Lieberkuehnia paludosa*, particularly by its being very much more slender—nearly 6 times as long as broad.

The nucleus is spherical, the pseudopodia straight and unbranched. The hyaline shell is conical and abruptly cut off at the narrow end. The aperture is situated at the broader end of the conic shell.

Not very frequent at Botany Swamps.

4. *ECHINOPYXIS AUSTRALIS*. Nova species.

This species appears like an *Arcella* with spines. There is no hexagonal reticulate sculpture on the shell, which is brownish-grey in color.

The spines are situated in a circle on the margin of the flattened shell, in length about $\frac{1}{3}$ of the diameter of the shell, from 7-10 in number, and obtusely pointed.

The last part resembles *Arcella vulgaris* in every respect.

Botany Swamps, not very frequent.

5. *LECQUEREUSIA SPIRALIS*. Lecq.

This species has been found in the Botany Swamps, attached to Sphagnum, in November by me.

6. *DIFFLUGIA PYRIFORMIS*. Perty.

This species is frequent in Botany Swamps.

It is very remarkable that of these 6 species only two seem to be specifically Australian, and even these may be identical with species from elsewhere.

No peculiar or remarkable form of freshwater Rhizopod has been found in Australia.

Of course it is not possible to say whether the species enumerated are indigenous or not.

We could easily imagine that some specimens of one or the other might have been brought in the freshwater in ships or in other ways. We can, however, not assume that there were no freshwater Rhizopoda in Australia before the advent of Europeans, and so it seems that some of these species are indigenous.

It is impossible that they should travel through the wide expanse of salt water which divides Australia from the other Continents.

We cannot suppose that they can have developed independently of each other, because they are so very similar in detail, and must therefore assume that they are animals of very great geological age, and that they have remained unchanged all the time, since the landbridge between Australia and any other Continent disappeared.

The fact that no Rhizopods peculiar to Australia have been found, seems to indicate that no recent spontaneous generation has occurred.